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THE EFFECT OF PERSONALIZATION AND VEILED THREAT PROMPTING TECHNIQUES ON NONRESPONDENTS

by

© HEATHER ANN ANDREWS

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled The Effect of Personalization and Veiled Threat Prompting Techniques on Nonrespondents submitted by Heather Ann Andrews in partial fulfilment of the requirements for the degree of Master of Health Services Administration.

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ABSTRACT

A primary problem associated with the use of the mail questionnaire is that of obtaining high rates of return and valid responses from the subjects under study. The purpose of this project was to determine the effect of personalization of follow-up correspondence and utilization of a veiled threat follow-up letter in stimulating responses from a random sample of nonrespondents in a population survey of nurses.

Combinations of the above-mentioned prompting techniques were sent to four randomly selected and randomly assigned groups of nonrespondents. The effects of this follow-up were analyzed in three areas: (1) response rates, (2) demographic characteristics of respondents, and (3) responses relative to continuing education needs.

It was found that the veiled threat letter stimulated a statistically significant different number of responses than did the casual letter as did the nonpersonalized-veiled threat combination. There was no difference between personalized versus nonpersonalized correspondence.

There were several significant differences across demographic characteristics among the tested prompting techniques and in relation to unprompted respondents. Most importantly, all techniques demonstrated significant differences in continuing education needs. This would indicate that the prompting techniques had some large systematic effect on the respondents in each group either by stimulating responses from a particular group of people or by causing respondents to alter their answers. There

was indication that, by forcing a response, the prompting technique caused respondents to change their opinions.

It was concluded that the veiled threat letter was more effective than the casual in increasing response rate and that personalization versus nonpersonalization did not differ statistically in their effects; that prompting techniques were effective with particular types of nonrespondents; and that use of the tested prompting techniques affected the validity of the prompted responses.

Recommendations focus mainly on clarifying the effect of prompting on the validity of responses.

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I. INTRODUCTION

Statement and Importance of Problem

A primary problem associated with the use of the mail questionnaire for information gathering is to obtain responses that are representative of the true characteristics and feelings of the population. This can only be assured by obtaining high rates of return and valid responses from the sample under study.

Although much has been written about techniques to stimulate return rates to questionnaires, little has been done to assess whether these techniques have differential effects on particular groups and/or whether the responses are valid and represent the true feelings of the population.

Much of the current research related to nursing makes use of the questionnaire to obtain information. It is of utmost importance that effective techniques for stimulating responses from the nursing population be identified and that responses from these techniques be assessed for validity.

The purpose of this project was to determine the effectiveness of personalization of follow-up correspondence and utilization of a veiled threat follow-up letter in stimulating response from a random sample of nonrespondents to a survey of continuing education needs of Registered Nurses in the Province of Alberta. The attempt was also made to determine whether a difference existed in the characteristics

of the respondents to each category or combination of categories of prompting techniques and whether the responses provided by the respondents differed from the unprompted responses or from each other.

Rationale Underlying the Study

Although the beginnings of research in nursing are associated with Florence Nightingale and her 1892 Notes on Nursing: What It Is and What It Is Not in which she described nursing and its associated problems,[1] nursing research today is still considered as being in the developmental stages. Simms, in her descriptive study on nursing research in Alberta, suggested that nursing research in Canada was in its embryonic stage in 1972.[2] In 1977, Dr. Shirley Stinson stated, "While there is good beginning documentation as to titles, authors, and sources of Canadian nursing research projects to date, literature pertaining to Canadian problems, issues, trends, and the dynamics of research development is sparse."[3]

Beginning research in any field of endeavor tends to be largely "information gathering" and behavioral researchers frequently make use of questionnaires to accomplish this task. Although there are many advantages to the use of questionnaires, limitations associated with their use are also recognized.

---

[1]Burton Meyer and Lorretta E. Heidgerken, Introduction to Research in Nursing, (Philadelphia: J.B. Lippincott Company, 1962), pp. 22-36

[2]Ada Elizabeth Simms, "Nursing Research in Alberta: A Beginning Descriptive Study," (M.H.S.A. Major Paper, University of Alberta, 1972), p. 21.

[3]Shirley M. Stinson, "Central Issues in Canadian Nursing Research," in Issues in Canadian Nursing, ed. Betsy LaSor and M. Ruth Elliott, (Scarborough, Ontario : Prentice-Hall of Canada Ltd., 1977), p. 4.

One of the primary areas of concern is the effect of low, and thus potentially biased, response on the validity and reliability of the study.[1] Rocher stated that rates of return vary directly with the significance of the findings.[2] It has also been suggested that the degree of response to a questionnaire correlates positively with the subject's interest in the topic.[3]

In attempts to alleviate this problem, methods for increasing return rates to mail questionnaires have been postulated and tested. Many of these techniques have been tested relative to their effectiveness in increasing response rates to initial questionnaire mailout but the effect of follow-up prompting on validity of responses has not been well established. It has also been discovered that different methods of prompting and follow-up vary in their effectiveness with the characteristics of the subjects of the survey.[4]

The need for inquiry into methodology used in nursing research has been repeatedly identified. The objectives of the First National Conference on Research in Nursing Practice identified this topic as a priority for discussion.[5]

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[1] G. Allan Rocher, "Effective Techniques in Increasing Response to Mailed Questionnaires," Public Opinion Quarterly 21 (Summer 1963):299.

[2] Ibid., p. 299.

[3] H.A. Edgerton, S.H. Britt, and R.D. Norman, "Objective Differences Among Various Types of Respondents to a Mailed Questionnaire," American Sociological Review 12 (August 1947): 235-44.

[4] Arnold S. Linsky, "Stimulating Response to Mailed Questionnaires: A Review," Public Opinion Quarterly 39 (Spring 1975): 100.

[5] Report, "National Conference on Research in Nursing Practice," Canadian Nurse 67 (April 1971): 34.

Stinson identified the controversy surrounding methodological concerns in nursing research and suggested that the issue of nursing research methodology relates to "a search for improved validity in the strict research sense."[1]

The rationale underlying this study is that there is a distinct need for research into the methods of information gathering that are being utilized to elicit information from the nursing community. It is of utmost importance that effective ways of utilizing the questionnaire are identified as its use as a measurement tool is so prevalent.

Assumptions and Limitations

Several limitations are associated with the design of the study. Persons omitting their A.A.R.N. Registration Number on the initial questionnaire would not have been eliminated from the list of nonrespondents and thus may have been included as part of the follow-up sample. The follow-up correspondence requested that the second questionnaire be disregarded if the initial questionnaire had already been returned. Thus, some unidentifiable recipients of prompting correspondence may have discarded the second questionnaire having already responded to the first.

There was also a possibility that some subjects in the follow-up sample returned the initial questionnaire just prior to the mailing of the follow-up correspondence with the result that the letters crossed in the mail. Also, it cannot be guaranteed that subjects receiving follow-up correspondence did not return the initial questionnaire. If these persons did not provide their registration number, it was not possible

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[1]Shirley M. Stinson, "Central Issues in Canadian Nursing Research," in Issues in Canadian Nursing, ed. Betsy LaSor and M. Ruth Elliott, (Scarborough, Ontario: Prentice-Hall of Canada Ltd., 1977), pp. 36 & 41

to identify whether a subject returning the initial questionnaire had also been sent follow-up correspondence. It was not possible to identify which type of follow-up was received by 25 respondents because registration numbers were not provided in the prompted returns.

Although the attempt was made to establish a power ($1-\beta$) for statistical analyses at about .80 by selecting a large enough sample size, some of the analyses demonstrated low power, especially where responses were compared for validity. It would also have been advantageous to utilize more items for validity comparison but the numbers of respondents to these items were low and, in such cases, results of statistical analyses remain questionable.

In addition, it would have been beneficial to establish statistically the effects of the different techniques on the actual responses provided to several items by the various demographic categories of respondents. The numbers of respondents in a particular category were often so low that to determine the characteristics of their responses would have been questionable if not impossible to do.

This investigation involved follow-up on a particular questionnaire to a specific population of nurses. The influence of the studied follow-up techniques may thus be limited to these nurses, to this questionnaire, to method of mailing, or any combination of these three.

The results of this study should be considered in light of the above limitations.

Definition of Terms

Casual Letter - a "low key", generalized reminder to the recipient to complete and return the questionnaire.

Continuing Education - Continuing education for nurses involves updating and building upon present knowledge and skills, as well as acquisition of new knowledge, skills and attitudes which have relevance for nursing (A.A.R.N. Position Paper on Nursing, January 1976).

Follow-up Correspondence - a letter and second questionnaire sent to nonrespondents to the initial questionnaire for the purpose of reminding and encouraging them to participate in the study.

Nonpersonalization - a procedure of giving the impression that the recipient of the follow-up correspondence has not been individually identified and that follow-up is being sent to all subjects of the initial survey.

Personalization - a procedure of giving the impression that the recipient of the follow-up correspondence is receiving the individual attention of the project director.

Prompted Respondents - those subjects who completed and returned the questionnaire that was included with the follow-up letter.

Prompting Technique - a method or device designed to elicit completion and return of questionnaires.

Unprompted Respondents - those subjects who completed and returned the initial questionnaire prior to the identification of the nonrespondents.

Veiled Threat Letter - a concealed exertion of force on the recipient to comply to the request to complete and return the questionnaire.

The following chapter presents a selected review of the literature relating to questionnaire validity. It is followed by a description of the methodology involved in conducting the project and analysis of the data. Presentation of the results obtained together with relevant discussion are contained in Chapter 4. In the final chapter, the project is summarized, conclusions are drawn, and recommendations for further study are suggested.

II. A SELECTIVE REVIEW OF THE LITERATURE

Most of the literature relating to questionnaire validity has arisen out of the disciplines of psychology, sociology, business and education over the past 30 years. Articles on questionnaire methodology often tend to express opinion rather than empirical evidence and results from various studies are often inconsistent and sometimes conflict. Accordingly, the science of questionnaire usage is not firm and few documents exist which capture the full perspective of all the difficulties inherent in this data collection technique.

The purpose of this literature review is to examine the use of questionnaires as research instruments, their advantages and limitations, and to delineate techniques that have been suggested to alleviate associated problems. Due to the focus of this study, techniques to increase response rates are given particular attention.

Features of Questionnaires

A questionnaire has been defined as "a device for securing answers to questions by using a form which the respondent fills in himself."[1] The mailed questionnaire has become one of the most widely used methods to collect large amounts of data and for decades it has

---

[1]William Goode and Paul Hatt, Methods in Social Research, (New York: McGraw-Hill, 1962), p. 133, cited by Douglas R. Berdie and John F. Anderson, Questionnaires: Design and Use, (Metuchen, N.J.: The Scarecrow Press, Inc., 1974), p. 11.

been considered "one of the most economical tools of researchers in a variety of fields."[1]

Advantages of Mail Questionnaires

The use of a mail questionnaire in research has many advantages. Berdie and Anderson have described several of these:

1. The questionnaire is less costly than other methods of obtaining information. The costs involved in printing, distributing and even following up the questionnaire are much less than interviewing the same number of people.
2. Contacting persons who are to be part of the study is not a major problem with mail questionnaires. The questionnaire arrives in their mail and, thus, potential respondents are easily procured.
3. The questionnaire facilitates collection of data from large numbers of people in a relatively small amount of time. In fact, all study participants may be contacted at approximately the same time.
4. Use of a mail questionnaire permits coverage of large geographic areas quickly and efficiently and with little difference in cost.
5. Mail questionnaires are more convenient for respondents to complete. They can do so in their own time and at their own pace.

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[1]Mary B. Kawash and Lawrence M. Aleamoni, "Effect of Personal Signature on the Initial Rate of Return of a Mailed Questionnaire," Journal of Applied Psychology 55 (December 1971):589.

6. The presence of an interviewer in obtaining information may lead to bias on the part of the respondent or the interviewer. Questionnaires, provided that they are well worded, avoid this.
7. In some studies, especially where opinions are sought, it is important to survey all of the potential respondents at once. Mail questionnaires permit this.
8. By using mail questionnaires, all persons who participate in the study receive the same input. This cannot be assured when using such methods as the interview.[1]

Hochstim and Athanasopoulos cite two more advantages to the use of a questionnaire rather than personal interview: questionnaires do not require recruitment, training, and supervision of interviewers and are not susceptible to interviewer bias or variability.[2] Nevin and Ford offer another advantage in that questionnaires allow for anonymity of the respondent.[3]

Limitations of Mail Questionnaires

Although the advantages of using a mail questionnaire to collect data are numerous, there are limitations associated with its use. The three most serious drawbacks appear to be lack of response, slowness of

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[1]Douglas R. Berdie and John F. Anderson, Questionnaires: Design and Use, (Metchuchen, N.J.: The Scarecrow Press, Inc., 1974), pp. 17-22.

[2]Joseph R. Hochstim and Demetrios A. Athanasopoulos, "Personal Follow-up In A Mail Survey: Its Contribution and Its Cost," Public Opinion Quarterly 34 (Spring 1970):69.

[3]John R. Nevin and Neil M. Ford, "Effects of a Deadline and a Veiled Threat on Mail Survey Responses," Journal of Applied Psychology 61 (February 1976):116.

response, and poor quality of response.[1] These points will be discussed in depth together with methods utilized to alleviate the problem.

Berdie and Anderson suggest additional limitations. Reliability-- the dependability of the measurement-- and validity-- the extent to which the characteristic is actually being measured-- of questionnaires are difficult to establish.[2] According to Kerlinger, however, achieving reliability is largely a technical matter.[3] The probability of an accurate measurement reliability can be improved if items are written unambiguously, instructions are clear, and more and duplicate items are included.[4] Validity, on the other hand, is very difficult to establish as it pervades all aspects of experimental design.[5]

Some recipients of questionnaires may be prejudiced against them either because they receive so many or because they do not view questionnaires as a reputable manner to obtain data. Others may be offended by the apparent impersonalization of questionnaires.[6]

The manner in which a questionnaire is completed may also cause concern, for the researcher has little control over this. It cannot be guaranteed that the designated person will respond and there is no control over the order in which the items are answered. In some cases,

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[1] Ibid., p. 116.

[2] Berdie and Anderson, Questionnaires, pp. 20-2

[3] Fred N. Kerlinger, Foundations of Behavioral Research, (New York: Holt, Rinehart and Winston, Inc., 1973), p. 473.

[4] Ibid., p. 454.

[5] Ibid., p. 473.

[6] Berdie and Anderson, Questionnaires, p. 22.

questions towards the end of the form may influence responses to items at the beginning.[1]

For some purposes, use of a mail questionnaire to obtain data is just not feasible.[2] The example that Berdie and Anderson provided indicates that people who cannot read are not suitable candidates for a mail questionnaire survey.

Nonresponse and Response Bias

Most efforts aimed at alleviating limitations associated with mail questionnaires have been directed towards lack of response or low response problems. The problem with low response rates stems from the assumption that, if the sample under study has been randomly selected and if all individuals in the sample respond, the data will reflect population characteristics. If the response rate is low, however, the representativeness of the results is questionable.[3] In such designs, the researcher cannot be certain that generalizations from the data are valid unless response rates are or are almost 100 percent.

In their analysis of an extensive number of studies related to whether or not low response rates do bias data, Berdie and Anderson revealed contradictory findings.[4] In their attempt to assess the effect of nonresponse bias in a study by the Human Population Laboratory in California, Hochstim and Athanasopoulos identified appreciable differences in demographic and socioeconomic data between respondents

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[1] Berdie and Anderson, Questionnaires, p. 22.

[2] Ibid., p. 22.

[3] Ibid., pp. 49-52.

[4] Ibid., p. 49.

and nonrespondents.[1] Mayer and Pratt, in their survey of individuals involved in automobile accidents, demonstrated different biases in two categories of nonrespondents.[2] Knowledge of these categories was utilized in the analysis of data to weight responses in an attempt to minimize nonresponse bias. In his 1948 review of research on sample bias in mail questionnaire studies, Norman found that the majority of investtigators found significant differences in intelligence and attitudes between respondent and nonrespondent groups.[3]

On the other hand, McDonagh and Rosenblum, in their interviews of nonrespondents in a survey, found that the responses of those completing the questionnaire were not significantly different from those of interviewed nonrespondents.[4] They do not specify, however, whether the responses were related to biographic data or core content of the questionnaire. Unless biographic variables are systematically related to the answers given, differences between respondents and nonrespondents do not matter. Berdie and Anderson point out that studies comparing respondents and nonrespondents have typically compared only demographic data and that

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[1] Hochstim and Athanasopoulos, "Personal Follow-up," p. 73.

[2] Charles S. Mayer and Robert W. Pratt, Jr., "A Note on Nonresponse in a Mail Survey," Public Opinion Quarterly 30 (Winter 1966-67): 645.

[3] Ralph D. Norman, "A Review of Some Problems Related to the Mail Questionnaire Technique," Educational and Psychological Measurement VIII (1948):234-45, cited by Carson M. Bennet and Robert E. Hill, "A Comparison of Selected Personality Characteristics of Responders and Nonresponders to a Mailed Questionnaire Study," Journal of Educational Research 58 (December 1964):178.

[4] Edward C. McDonagh and Leon A. Rosenblum, "A Comparison of Mailed Questionnaires and Subsequent Structured Interviews," Public Opinion Quarterly 29 (Spring 1965):131.

these data may not be relevant to other response rate problems.[1] In some instances, differences between respondents and nonrespondents may not be relevant to the purposes of the study. This is especially applicable to demographic differences that have no reflection in the answers provided by the respondents. "Careful consideration should dictate whether or not nonresponse bias is a danger."[2] If it is, a decision must be made as to what percentage of response is necessary to assure representativeness.

Bennet and Hill have suggested that an 80 percent response rate is necessary to eliminate the main effects of nonresponse bias.[3] However, this is generally considered to be a function of the homogeneity of the population itself. When response rates are low, the resulting sample may be self selected by respondents. Some investigators have found that nonrespondents tend to be less involved in the subject matter. Therefore, the less complete the data, the more likely that the results will be biased in favor of the topic under study.[4] As the response rate increases, however, the risk of response bias from nonresponse is reduced.[5]

For the above reasons, studies related to securing replies and reducing potential bias problems are abundant. Linsky has identified two types of research that have developed around these problems:

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[1]Berdie and Anderson, Questionnaires, p. 50.

[2]Ibid., p. 51.

[3]Bennet and Hill, "Comparison of Personality Characteristics," p. 178.

[4]Marjorie Donald, "Implications of Nonresponse for the Interpretation of Mail Questionnaire Data," Public Opinion Quarterly 24 (Spring 1960):112.

[5]Mayer and Pratt, "A Note on Nonresponse," p. 637.

"(1) techniques for increasing response level and (2) ascertaining the amount and direction of bias introduced into research because of non-response."[1]

Techniques for Increasing Response Level

The mail questionnaire has become a widely used method for collecting data. Related research over the past 30 years has been concentrated on techniques for increasing response level. One of the greatest obstacles in the use of this instrument, low response and potentially biased results, can be alleviated if response can be stimulated.

Efforts to increase response rates can be evoked at four points in the execution of the study: (1) before the questionnaire is mailed, (2) during the decisions regarding questionnaire format, (3) coincidental to mailing, and (4) after mailing.

(1) Prior to Mailing

Precontact of study subjects prior to mailing the questionnaire has been shown to effectively stimulate response. Precontact can be established by letter, post card, or personal contact. Its purpose is to identify the researchers, explain the purpose of the study, request cooperation, and explain what will be done with the results.

Linsky, in his review of 12 precontact studies, stated that all appeared to increase response rate.[2] Precontact was established by mail, telephone, and personal contact and the best results were reported

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[1]Arnold A. Linsky, "Stimulating Response to Mailed Questionnaires: A Review," Public Opinion Quarterly 39 (Spring 1975):82-3.

[2]Linsky, "A Review," p. 84.

by Stafford who demonstrated an increase of 47.7% in response rate when respondents were precontacted by telephone.[1] The differences between response rates of precontact and no precontact in each method were inconsistent, varying between a 1% difference to a 23.2% difference in mail precontact alone.[2]

Parsons and Medford suggested that precontact by letter was not an effective way to increase response rate in their study of an homogeneous group of university alumni.[3] This was the only study found by this author in which precontact did not increase response rate. It is not known whether the effective results from precontact studies involved heterogeneous or homogeneous groups.

(2) Questionnaire Format

The format of the questionnaire itself has been the object of many studies dealing with variables from length of the form to the color of paper on which it is printed. It is generally believed that the shorter the questionnaire, the higher the response rate. Clausen and Ford were first to challenge the belief that mail questionnaires must be short.[4] Linsky's review of seven studies on questionnaire length revealed conflicting results: four of the studies revealed essentially

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[1]J.E. Stafford, "Influencing of Preliminary Contact on Mail Returns," Journal of Marketing Research 3 (November 1966):410-11 cited by Linsky, "A Review," p. 84,

[2]Linsky, "A Review," p. 84.

[3]Robert Parsons and Thomas Medford, "The Effect of Advance Notice In Mail Surveys of Homogeneous Groups," Public Opinion Quarterly 36 (Summer 1972):258-9, cited by Berdie and Anderson, Questionnaires, p. 99.

[4]John A. Clausen and Robert N. Ford, "Controlling Bias in Mail Questionnaires," Journal of the American Statistical Association 42 (Month Unknown, 1947):497-511, cited by Hochstim and Athanasopoulos, "Personal Follow-up," p. 70.

no difference in response rates between long and short questionnaires.[1] In these studies, however, there was considerable discrepancy in what were considered "long" and "short" questionnaires. The studies also tended to confound page length with content and thus do not provide clear evidence that the results are due only to questionnaire length.

Some authors point out that length is not a priority if content is synthesized and the questionnaire forms an integrated whole with items having an obvious relationship to each other and to the purpose of the questionnaire.[2] Leslie, in 1970, has suggested that the problem of length is a psychological one and that this can be dealt with by shortening the questionnaire with commercial printing that can make use of smaller size type and better spacing.[3]

Method of reproduction of the questionnaire is considered to be an important factor by some in rates of return. In his consumer shopping survey, however, Ford found no significant difference between commercially printed questionnaires and mimeographed questionnaires.[4] Although Nixon and Leslie have advocated photo offset printing, they do not appear to have tested their postulations.[5,6]

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[1] Linsky, "A Review," p. 90.

[2] R. Franzen, "The Construction of a Questionnaire," Market Research (May 1936):17-19, cited by Larry Leslie, "Increasing Response Rates to Long Questionnaires," The Journal of Educational Research 63 (April 1970):347.

[3] Leslie, "Increasing Response," p. 348.

[4] N.M. Ford, "Questionnaire Appearance and Response Rates," Journal of Advertising Research 8 (September 1968):43-5, cited by Linsky, "A Review," p. 91.

[5] John Nixon, "The Mechanics of Questionnaire Construction," The Journal of Educational Research 47 (March 1954):481-7, cited by Berdie and Anderson, Questionnaires, p. 98.

[6] Leslie, "Increasing Response," p. 348.

A generally neat and attractive appearance of the questionnaire is considered to be a foregone conclusion. Berdie and Anderson stated that questionnaires with "white space" will likely achieve higher response rates than questionnaires in which the items are crowded together because the "white space" achieves a professional and distinctive appearance and also provides room for subjective comments.[1]

Another aspect of questionnaire construction that is often thought to affect response rate is item format, that is, precoded versus open-ended questionnaires. Stevens, for example, in his survey of college alumni, found no significant difference between the two forms but favors the use of pre-coded questionnaires to facilitate tabulation.[2]

The effect of color of questionnaire on response rate has been tested by several researchers with no significant differences resulting.[3]

(3) Coincidental to Mailing

Factors which are thought to affect response rate coincidental to the mailing of the questionnaire relate to the covering letter and the type of mailing of the correspondence, deadlines, and inclusion of incentives.

Several factors relating to the covering letter itself have been tested by researchers. Berdie and Anderson have stated that the covering letter should be short and to the point and include information regarding the nature of the study and how the data will be utilized.[4]

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[1]Berdie and Anderson, Questionnaires, p. 62.

[2]R.E. Stevens, "The Influence of Precoding Mail Questionnaires on Response Rates," Public Opinion Quarterly 38 (Winter 1974):621-2, cited by Linsky, "A Review," p. 91.

[3]Linsky, "A Review," p. 59.

[4]Berdie and Anderson, Questionnaires, p. 59.

Linsky, in a survey of members of a state nurses association, investigated four factors in cover letter content: personalization, social utility of the project, the respondent's place in the study, and a plea to assist the researcher. Personalization and the place and importance of the respondent were shown to have a significant effect. To communicate to the subject his place and importance in the study, Linsky, in the follow-up correspondence, informed each individual that they were part of a select group receiving the questionnaire. It was also stated that the validity of the study was dependent upon receipt of all questionnaires and that the individual was in an ideal position to complete the questionnaire.[1]

Signature on the cover letter was hypothesized to be another factor influencing response rate. When comparing the use of a title with the signature as opposed to signature alone, Roeher stated a 26% increase in response rate when a title was used.[2]

The effectiveness of including a deadline date on the cover letter is yet to be established. Nevin and Ford have stated that a deadline date did not appear to stimulate a heavier or more immediate response but did seem to decrease returns beyond the deadline date.[3]

Form of address on the conveying envelope was considered to be a factor influencing response rates. Berdie and Anderson suggested that hand-addressed or individually-typed correspondence is more palatable

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[1]Arnold Linsky, "A Factorial Experiment in Inducing Responses to a Mail Questionnaire," Sociology and Social Research 49 (January 1965):185.

[2]G.A. Roeher, "Effectiveness Techniques in Increasing Response to Mailed Questionnaires," Public Opinion Quarterly 27 (Summer 1963): 302.

[3]Nevin and Ford, "Effects of a Deadline," p. 117.

than printed labels on letters.[1] Numerous studies relating to type of postage on outgoing and return envelopes appear to indicate that the higher the denomination of postal rate, the greater the response rate. Kephart and Bressler found that special delivery mail was effective in stimulating response rate.[2] Of eight studies reviewed by Linsky that compared hand-stamped return envelopes with postage permit envelopes, response rates were always higher with the hand stamped ones.[3] Ferris, in his study on the effect of enclosing a stamped envelope as opposed to enclosing no envelope at all, stated a 64.3% difference in return rate favoring the stamped envelope.[4] It is difficult to compare many of the studies in this area as the investigators' techniques tend to confound the variables and often do not separate or identify the effect of any one.

The inclusion of incentives with the initial mailing of a questionnaire has been frequently studied. Incentives vary from cash rewards to gadgets, lottery tickets and trading stamps. All incentives appear to have favorable results but the cost factor may be prohibitive.[5] As well as being found effective in commercial and market studies, cash rewards have been shown effective in academic surveys and studies of

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[1]Berdie and Anderson, Questionnaires, p. 65.

[2]William Kephart and Marvin Bressler, "Increasing the Responses to Mail Questionnaires: A Research Study," Public Opinion Quarterly 22 (Summer 1958):123-32, cited by Berdie and Anderson, Questionnaires, p. 92.

[3]Linsky, "A Review," pp. 98-9.

[4]A.L. Ferris, "A Note on Stimulating Response to Questionnaires," American Sociological Review 15 (April 1951):247-9, cited by Linsky, "A Review," p. 89.

[5]Linsky, "A Review," pp. 98-9.

professional nurses.[1]

(4) After Mailing

Follow-up of survey nonrespondents by means of interviews, phone calls or correspondence contributed to an increase in return rate. Eckland demonstrated that follow-up by telephone and/or certified mail resulted in a higher return than follow-up by regular mail.[2] Sletto determined that post card follow-ups were equally as effective as letters.[3]

Types of mailing also enter into effectiveness of follow-up. Of four studies comparing special delivery with first class mailing of follow-up correspondence, all reported a decisive advantage of the former.[4]

The advantage of including a second questionnaire with the follow-up correspondence has not been frequently or well tested. Dillman utilized this technique but, although his results demonstrated effectiveness, the study has been criticized because no control group was utilized in the design.[5]

In comparative evaluation of precontact versus follow-up, Kephart and Bressler, in their study involving nurses, have stated that the data

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[1]Kephart and Bressler, "Increasing Responses," p. 123.

[2]Bruce K. Eckland, "Effects of Prodding to Increase Mail-Back Returns," Journal of Applied Psychology 49 (June 1965):169.

[3]R. Sletto, "Pretesting of Questionnaires," American Sociological Review 15 (February 1940):193-200, cited by Linsky, "A Review," p. 85.

[4]Linsky, "A Review," p. 86.

[5]Don A. Dillman, "Increasing Mail Questionnaire Response in Large Samples of the General Public," Public Opinion Quarterly 36 (Summer 1972):255.

suggest that follow-up is a more productive way to increase response rates.[1]

Personalization

A previously unmentioned technique for increasing response rate is personalization of the correspondence. Personalization has been defined as "the process of creating a belief on the part of the respondent that he is receiving the researcher's individual attention."[2] Personalization can be utilized in personal contact with or correspondence with subjects prior to, coincidental to, or following mailing of the questionnaire.

A variety of techniques has been suggested to accomplish personalization. Type of stationery, names and street addresses individually typed on each letter, identificiation of the subject's importance in the study, individually signed signature, and individually typed addresses on the envelopes have all been tested as aspects of personalization.

Dillman stated that letters should be reproduced on letterhead stationery and individually signed by the project director. Inside addresses should be entered with matching type to achieve the appearance that the entire letter has been individually typed for the subject.[3] Dillman and Frey tested the effect of individually typed names, inside addresses, personal salutations, and individually signed letters as

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[1]Kephart and Bressler, "Increasing the Responses," p. 127.

[2]Don A Dillman and James H. Frey, "Contribution of Personalization to Mail Questionnaire Response as an Element of a Previously Tested Method," Journal of Applied Psychology 59 (June 1974):297.

[3]Dillman, "Increasing Response," p. 256.

opposed to preprinted salutations and signatures. Results of this study were inconclusive in that varying degrees of personalization yielded different results with the highly personalized format (individually typed letters) not having a significant effect on response rate.[1] Linsky reported on 16 studies of personalization in the cover letter. None of these reported higher return rates for the personalized format, 4 reported no significant differences, and 3 reported higher return rates for non-personalized format.[2] Matteson studied the effect of individualized salutation and signature. He demonstrated a significant increase in response rate with use of the personalized format.[3] No significant difference was discovered by Kawash and Aleamoni in their study of personal signature versus mimeographed facsimile.[4]

Landy and Bates tested the effects of three different levels of personalization relating to duplication-dittoed cover letter, mimeographed cover letter, and individually typed cover letter. None of the results were significantly different.[5]

Types of postage used on the correspondence are also considered to be an aspect of personalization. Metered postage is considered to be an aspect of depersonalization whereas the novelty of an attractive stamp

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[1]Dillman and Frey, "Contribution," p. 297.

[2]Linsky, "A Review," p. 92.

[3]Michael T. Matteson, "Type of Transmittal Letter and Questionnaire Color As Two Variables Influencing Response Rates in a Mail Survey," Journal of Applied Psychology 59 (August 1974):535.

[4]Kawash and Aleamoni, "Effect of Personal Signature," p. 589.

[5]Frank I. Landy and Frederick Bates, "The Noneffect of Three Variables on Mail Survey Response Rate," Journal of Applied Psychology 58 (February 1973):148.

is considered to contribute to personalization.[1] Although the effectiveness of this technique has been suggested, this author found no evidence of experimental verification.

Hand-addressed envelopes are also considered to be more personal than label-addressed envelopes. In their study relative to this point, Anderson and Berdie discovered no significant difference between the two.[2]

Closely tied to the subject of personalization is the issue of anonymity. Personalized correspondence from study directors could create suspicion in subjects who are concerned with the anonymity or confidentiality of their response. It was suggested and demonstrated by Kerin and Peterson that personalization may increase response rate but decrease the veracity of the response. In their study regarding this subject, they demonstrated that, although personalized precontact had no distortive effect on survey results, a personalized cover letter did.[3] The distortion was related to reporting of family income and occupation of wife.

Anderson and Berdie have concluded that the effectiveness of personalization in mail surveys depends on the group of subjects involved in the survey.[4] As Linsky stated, "At present, there are

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[1]Dillman, "Increasing Response," p. 256.

[2]John F. Anderson and Douglas R. Berdie, "Effects on Response Rates of Formal and Informal Questionnaire Follow-Up Techniques," Journal of Applied Psychology 60 (April 1975):256.

[3]Roger A. Kerin and Robert A. Peterson, "Personalization, Respondent Anonymity, and Response Distortion in Mail Surveys," Journal of Applied Psychology 62 (February 1977):88.

[4]Berdie and Anderson, Questionnaires, p. 63.

certainly insufficient grounds for adopting the strategy of personalization in all cases."[1]

Veiled Threat

The characteristics of a veiled threat letter include specific identification of the subject as not having returned the questionnaire. Stress is also placed on the importance of the subject's response and his cooperation. Casual letters, on the other hand, merely remind the subject that the study is being carried out.[2]

Only two studies in which a veiled threat follow-up letter was utilized to stimulate response rates were discovered by this author. Dillman utilized this approach but did not use a control to determine the actual effect of the veiled threat.[3] In 1976, Nevin and Ford tested the effect of veiled threat follow-up letters as opposed to casual follow-up. The overall response rate generated by the veiled threat letter was significantly higher than that generated by the casual approach. Interestingly enough, the veiled threat did not significantly affect response bias.[4]

Concluding Remarks

There is a wide variety of techniques which have been designed to increase return rates to mail questionnaires. Some have been individually tested but the isolated effect of others has not yet been determined. Most researchers would agree, however, that a combination of

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[1] Linsky, "A Review," p. 94.

[2] Nevin and Ford, "Effects of a Deadline," p. 117.

[3] Dillman, "Increasing Response," p. 255.

[4] Nevin and Ford, "Effects of a Deadline," p. 117.

techniques is necessary to achieve a maximum favorable result. Several have stressed that the effectiveness of the techniques being used depends on the group being studied and that a technique(s) that is effective with one group may not be effective with another.

The findings for many techniques suggest complex interactions between the population under study and the technique being used. As Linsky has stated, "Little research has explicitly built into its design tests for specifications of findings with a variety of purposively selected populations."[1] Little has been done to determine effective techniques for stimulating response to mail questionnaires from the nursing population. The purpose of this project is to determine the effectiveness of two techniques, personalization and veiled threat, in follow-up correspondence to a population survey of Registered Nurses in the Province of Alberta.

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[1]Linsky, "A Review," p. 101.

III. METHODOLOGY

Introduction

The major area of focus of this investigation was upon two techniques for stimulating response rates in mail questionnaires--personalization and veiled threat. The study was done in concert with the Alberta Association of Registered Nurses' (A.A.R.N.) province-wide survey of employers of registered nurses and survey of all A.A.R.N. members in relation to continuing education needs of registered nurses in Alberta. The objective of this project was to determine the effect of personalization and veiled threat follow-up correspondence on a random sample of nonrespondents to the initial questionnaire which was sent to active (working) and associate (not working) A.A.R.N. Members.

The initial questionnaire was designed with extensive input with regard to both content and format from the A.A.R.N. Ad Hoc Committee responsible for organizing the study. The questionnaire was type set and printed as a tear-out attachment in the A.A.R.N. Newsletter. The questionnaire included introductory remarks explaining its purpose and assurance of the confidentiality of the response. (See Appendix I.) A postage-paid (on receipt of response), self-addressed envelope was included in the centerfold of the publication.

For follow-up purposes, respondents were asked to indicate their A.A.R.N. registration number on the questionnaire. Through the use of the A.A.R.N. Computerized Membership System, nonrespondents were identified (step 1.1 of Figure 1) and a random sample was selected

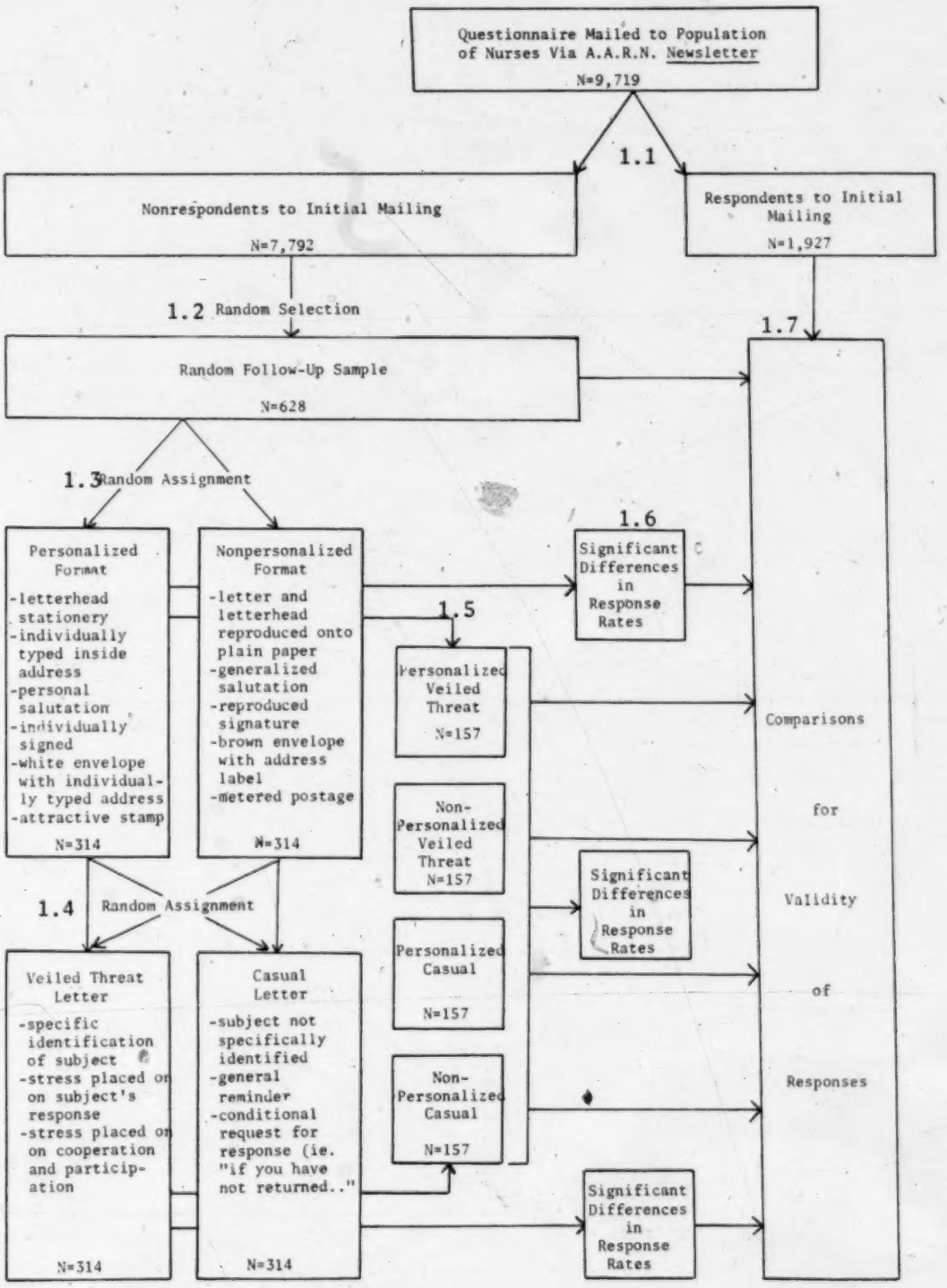

Figure 1. Methodology of Project

(step 1.2 of Figure 1). An attempt was made a priori in this project to establish adequate statistical power for all analyses. The power of a statistical test is the probability of accepting the alternate hypothesis, when it is true, or conversely, failing to accept a false null hypothesis. Power is directly related to "effect size" or "the degree to which the phenomenon is present in the population."[1] If the phenomenon is not present in the population, the effect size is 0. If the phenomenon is present, however, its effect size is some specific nonzero value. The larger this value, the greater the degree to which the phenomenon is manifest.[2] Values have been established to provide an effect size index for statistical analysis and operational definitions for "small", "medium", and "large" effect sizes have been provided by Cohen.

For example, with a Chi-square test (df=1), a small effect size (SES) represents a 5% difference in the population, a medium effect size (MES) represents a 15% difference, and a large effect size (LES) represents a 25% difference. The level of significance for all analyses in this project was maintained at α_2=.05. Degrees of freedom varied with each analysis. It was the objective in this project to have power of at least .8 in all analyses for MES in detecting differences in response rates.

A random sample of 628 individuals was selected and randomly divided into two groups, one of which received a personalized follow-up

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[1]Jacob Cohen, Statistical Power Analysis for the Behavioral Sciences, (New York: Academic Press, 1977), p. 9.

[2]Ibid., p. 10.

letter and the other received a nonpersonalized follow-up letter. (See Figure 1--steps 1.2 and 1.3). Each of these groups was further randomly divided into two more groups. One group received a casual follow-up letter and the other received a veiled threat follow-up letter. (See step 1.4 of Figure 1.) The resulting sample consisted of four subgroups, each composed of 157 nonrespondents (Figure 1--step 1.5). Each subgroup received a follow-up letter consisting of different combinations of the two prompting techniques: (1)personalized-casual, (2) personalized-veiled threat, (3)nonpersonalized-casual, and (4)nonpersonalized-veiled threat.

Personalization of the Follow-up Correspondence

A combination of personalization techniques was utilized for the personalized follow-up correspondence. The letter was reproduced onto A.A.R.N. letterhead stationery by use of an I.B.M. Copier.[1] An example of the actual appearance of this letter is contained in Appendix II. Inside addresses were entered with matching type and salutations consisted of the recipient's first name.[2] All personalized letters were individually signed by the project director.[3] The personalized follow-up correspondence was enclosed in a white envelope on which each recipient's address was individually typed. Attractive stamps were used for postage on the personalized correspondence because Dillman suggested that metered postage could contribute to depersonalization.[4]

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[1]Dillman, "Increasing Response," p. 256.

[2]Dillman and Frey, "Contribution," p. 297.

[3]Dillman, "Increasing Response," p. 256.

[4]Ibid., p. 256.

An example of a personalized letter is contained in Appendix II.

The nonpersonalized follow-up correspondence consisted of a form letter typed initially onto the letterhead of the A.A.R.N. and reproduced on plain paper. Rather than the attractive colored emblem on each letter, there was a grey facsimile. The salutation was generalized to read "Dear A.A.R.N. Member" and the signature on the letter was reproduced with the letter. The nonpersonalized follow-up correspondence was enclosed in a brown envelope to which reproduced label addresses were affixed. Metered postage was utilized as a further aspect of nonpersonalization. An example of the nonpersonalized letter is contained in Appendix IV.

Veiled Threat and Casual Follow-up Letters

In combination with the personalized and nonpersonalized formats of the follow-up correspondence, two types of letters, veiled threat and casual, were used. The veiled threat letter specifically identified the subject as not having returned the questionnaire. The importance of the individual's response was stressed together with the importance of cooperation and participation in the study.[1] An example of the veiled threat letter is contained in Appendix III.

The casual letter did not specifically identify the subject and consisted of a general reminder that the study was being conducted. It requested that the second questionnaire be completed and returned "in the event that" the initial questionnaire had not been returned. The casual follow-up letter is contained in Appendix II.

A second questionnaire and a postage-paid, self-addressed

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[1] Nevin and Ford, "Effects of a Deadline," p. 117.

envelope were enclosed with each type of follow-up letter. All types of follow-up correspondence were mailed 29 days following the initial mailing date of the Newsletter. This period of time allowed for mailing time and about two weeks for the subject to respond. The cut-off date for receipt of responses coincided with the time that analysis of the data began (95 days following the initial mailing date and 66 days following mailing of the follow-up correspondence).

Analysis of the Data

Effects of Follow-up on Response Rate

Response rates for each category of follow-up were compared to determine which method(s) was most effective as a response stimulator (step 1.6 of Figure 1). In particular, Chi-squares were computed to determine whether or not there were significant differences in response rates of personalized and nonpersonalized follow-up correspondence and veiled threat and casual letters. Chi-square tests were also done on response rates for the four subgroups to determine whether the interaction of the techniques of personalization and casual versus veiled threat letters resulted in significant differences in response rates.

Effects of Follow-up by Demographic Characteristics of Respondents

Prior to the initial survey, the Ad Hoc Committee of the A.A.R.N. identified, for inclusion in the questionnaire, several demographic items considered to be related to continuing education needs. (See Appendix I, Part A, Items 1,2,7, and 7a.) It was important to determine whether the prompting techniques had any differential effect relative to the characteristics of those who responded. To assess this,

comparisons were made to determine whether there were significant differences in selected demographic characteristics (age, marital status, education, current employment, and current position) among the various subgroups of prompted respondents and whether these answers were different from those of the unprompted respondents.

The initial questionnaire was sent to the entire A.A.R.N. population and thus, with the exception of measurement error and the gross assumption that the respondents were representative of the population, the responses that were unprompted could be considered to provide the characteristics and feelings of the population, although it is more likely that the unprompted group represented those interested in continuing education. Goodness of Fit tests were done to determine whether there were significant differences in the demographic characteristics of the prompted respondents and whether these patterns of response differed from the unprompted group (step 1.7 of Figure 1). Although demographic differences between prompted and unprompted respondents may well be expected, because the subjects were randomly selected and randomly assigned to groups, demographic characteristics within the groups should have been (95% confident) equivalent. If significant demographic differences were observed among subgroups, there would be evidence that the prompting itself, the techniques utilized, and/or their combinations had some systematic effect relative to the demographic characteristics of subjects who responded to the follow-up questionnaire. Comparison would also indicate whether one technique was more effective with one group of subjects than with another.

Effects of Follow-up on Responses Relative to Continuing Education

Since the sample was randomly selected and then randomly divided, the opinions of each subgroup relative to continuing education should have been equivalent (95% of the time if α=.05). There are two reasons why this may not occur. (1) The prompting may have had a systematic effect which caused a particular demographic category of respondents to reply. These demographic differences may be predictive of continuing education needs. (2) The prompting may have caused respondents to provide a different answer than their true opinion because they were "forced" to respond.

Two items were selected to provide an indication of whether the prompted respondents demonstrated a different pattern of continuing education needs. Goodness of Fit tests were conducted between the various prompted subgroups and then between the subgroups and the unprompted respondents to determine whether systematic differences existed relative to continuing education needs.

Comparison of the responses of the prompted groups with each other makes possible identification of significant differences in demographic characteristics and continuing education needs in groups of persons whose characteristics and needs should have been equivalent (due to randomization). Observation of significant differences would indicate that the prompting and/or the technique utilized either elicited responses from a particular group of people and/or in some way affected the responses provided relative to continuing education needs.

Comparison of prompted responses with the unprompted group

provides an indication as to whether the second questionnaires elicited responses from subjects with different characteristics or continuing education needs than those responding to the initial questionnaire. No significant demographic differences in these analyses would lead one to question the affect of prompting should statistical differences result in continuing education needs.

Summarizing Remarks

Through a random sample of nonrespondents to a population survey of Registered Nurses, personalization of follow-up correspondence and use of a veiled threat letter were tested for effectiveness in stimulating response rate to a mail questionnaire. Statistical analysis was then performed on the resulting returns to determine the presence of significant differences in response rates for each category of prompting as well as for the combinations of techniques. Goodness of Fit tests were carried out on selected items to provide an indication of significant differences in demographic data and in continuing education needs among the categories of follow-up techniques and in relation to the unprompted responses.

IV. RESULTS AND DISCUSSION

Response rate to the initial mailing of 9,719 questionnaires in the A.A.R.N. Newsletter was 19.8%, leaving 7,792 nonrespondents. This response rate, however, may not be an accurate percentage of the true unprompted respondents due to uncertainty as to how many Newsletters were actually received.

Of the total number of follow-up letters (628) that were sent out to the randomly selected nonrespondents, five were returned undelivered, all due to change in address and new address unknown. The revised number in the sample was thus 623. The overall number of prompted returns was 334, giving a return rate for the follow-up sample of 53.2%. Twenty-six (4.2% of 623 and 7.8% of 334) prompted respondents did not indicate their registration number on the questionnaire and, as a result, it was not possible to identify exactly what type of follow-up they recieved. There was thus a total of 308 respondents who were specifically identified as having received one of the four types of follow-up correspondence.

Effects of Follow-up on Response Rates

The return rates for the various aspects of follow-up correspondence are illustrated in Table 1. The method that produced the highest response rate (56.7%) was the veiled threat letter. The lowest response rate (42.1%) was with the casual letter. Personalized and nonpersonalized return rates were very close to each other, 49.7% and 49.2% respectively.

TABLE 1

Return Rates for the Four Techniques of Follow-up Correspondence

Type of Follow-up Correspondence	Number Sent	Revised Number	Number Returned	Return Rate
Personalized	314	312	155	49.7%
Nonpersonalized	314	311	153	49.2%
Veiled Threat	314	312	177	56.7%
Casual	314	311	131	42.1%

In testing the hypothesis related to personalization of the follow-up correspondence, no statistically significant difference was found between the return rates of personalized versus nonpersonalized correspondence (χ^2=0.015 with 1 df, p=0.9040). The probability of identifying a population difference of 5% in response rates at α=.05 was .7 and of identifying a difference of 10% in response rate was greater than .99 (Table 2). Thus, if personalization does have an effect on response rate, it is of the order that is very probably less than 10% and one is 70% confident that it is less than 5%.

It was found that the veiled threat letter was statistically more effective (χ^2=13.297 with 1 df, p=0.0003) in eliciting responses from the random sample of nonrespondents than was the casual letter (Table 3). Since a priori, one could be 70% confident that a population difference in the order of at least 5% would be identified with this sample size but very confident (99%) of spotting a population difference of at least 10% in response rate, an examination of the size of the statistically significant sample difference between response rates of the veiled threat and casual correspondence was justified. The response rates were 56.7% and 42.1% respectively--a difference of 14.6%. With sample variation that occurs with randomization, the point estimate of 14.6% is not being suggested as the real difference, only the best estimate. For example, if one were to compute the 95% confidence bounds for this difference (C=.95 [.07 - .22]) one would tend to estimate that the veiled threat was probably at least 7% better than casual follow-up but probably not more than 22%. Technically, 95% of random samples would yield confidence bounds that would capture the true difference. Accordingly, the values of the lower

TABLE 2

Chi-square Test on Personalization of

Follow-up Correspondence

Status	Personalized	Nonpersonalized	Totals
Returned	155(49.7%)	153(49.2%)	308
Not Returned	157(50.3%)	158(50.8%)	315
Totals	312(100.0%)	311(100.0%)	623

χ^2=0.015, with 1 df, p=0.9040; 1-β at α=.05 for SES=.7 and for MES >.99.

TABLE 3

Chi-square Test on Veiled Threat Versus Casual Follow-up Correspondence

Status	Veiled Threat	Casual	Totals
Returned	177 (56.7%)	131 (42.1%)	308
Not Returned	135 (43.3%)	180 (57.9%)	315
Totals	312(100.0%)	311(100.0%)	623

χ^2=13.297, with 1 df, p=0.0003; 1-β at α=.05 for SES=.7 and for MES > .99.

and upper bounds do vary with each sample. With that limitation in mind, however, it is suggested that the reason why the null was rejected is because a population difference did exist between the effect of casual and veiled threat follow-up and the reason why it is picked up is because it was of the size (14.6% but probably no less than 7%) that had a strong probability (99%) of being identified. (See Table 4.)

In testing as to whether combinations of techniques demonstrated a significant difference in response rates, it was found that, with the personalized format, a veiled threat letter type was not statistically more effective (χ^2=3.705 with 1 df, p=0.0542) than was the casual letter type in eliciting responses from the sample of nonrespondents (Table 5). Although "no difference" in response rates was concluded at the set level of significance (α =.05), the probability of obtaining a difference in response rate as great or greater than that observed was .0542. The probability of identifying a difference of 5% in response rate (α =.05 with 1 df) was 1-β=.42, and a difference of 10%, 1-β =.94. Since power was only .42 for detecting difference of the order of 5% in the population, it is possible that this random sample, being of insufficient size to demonstrate population effects of that order, leads one to conclude "no differences" in response rate while a difference of that size (5%) remains entirely possible (.58). It was more likely that a difference of the order of 10% would have been identified (1-β =.94) and thus, if a difference does exist between veiled threat and casual follow-up return rates when combined with personalized format, it probably would be less than 10%.

It was found that, with the nonpersonalized format, a veiled threat letter was statistically more effective (χ^2=10.456 with 1 df,

TABLE 4

Return Rates for the Four Combinations of Follow-up Techniques

Type of Follow-up	Number Sent	Revised Number	Number Returned	Return Rate
Personalized-Veiled Threat	157	156	86	55.1%
Personalized-Casual	157	156	69	44.2%
Nonpersonalized-Veiled Threat	157	156	91	58.3%
Nonpersonalized-Casual	157	155	62	40.0%
Total	628	623	308	

TABLE 5

Chi-square Test on Veiled Threat Versus Casual Letter Type in Personalized Follow-up Format

Status	Veiled Threat	Casual	Totals
Returned	86 (55.1%)	69 (44.2%)	155
Not Returned	70 (44.9%)	87 (55.8%)	157
Totals	156(100.0%)	156(100.0%)	312

χ^2=3.705, with 1 df, p=0.0542; 1-β at α=.05 for SES=.42 and for MES $>$.99.

p=0.0012) than was the casual letter type in eliciting responses from the random sample of nonrespondents (Table 6). In this case, the probability of obtaining a difference in response rate as great (18.3%) or greater than that observed was 0.0012. The probability of identifying a population difference in response rate of 5% was .43 and of 10% was .94. One is led to conclude that, since the sample difference was 18.3% and was statistically significant, the real population difference is in the range of at least a medium effect size, that is, at least 10%.

When the casual letter type was employed, no statistically significant difference (χ^2=0.571 with 1 df, p=0.4499) was found between the return rates of personalized (44.2%) versus nonpersonalized (40.0%) correspondence (Table 7). That is, the probability of obtaining a difference in response rates as great (4.2%) or greater than that observed was .4499. The probability of identifying a population difference in response rate of 5% was .42 and of 10% was .94 (α=.05 with 1 df). Since power was only .42 for detecting differences of the order of 5% in the population, it is possible that this random sample leads one to conclude that there was no statistical difference between response rates of personalized and nonpersonalized follow-up correspondence when the casual letter type was employed. However, a difference of the order of 5% is still possible. Since it was more likely that a difference of 10% would have been identified (1-β=.94) but was not found, one is reasonably confident that, if a difference does exist between response rates for personalized and nonpersonalized follow-up correspondence when casual letter type is employed, it would probably be less than 10%.

There was no statistical difference (χ^2=0.326 with 1 df, p=0.5678) between the return rates of personalized (55.1%) versus

TABLE 6

Chi-square Test on Veiled Threat Versus Casual Letter Type in Nonpersonalized Follow-up Format

Status	Veiled Threat	Casual	Totals
Returned	91 (58.3%)	62 (40.0%)	153
Not Returned	65 (41.7%)	93 (60.0%)	158
Totals	156(100.0%)	155(100.0%)	311

χ^2=10.456, with 1 df, p=0.0012; 1-β at α=.05 for SES=.42 and for MES $>$ .99.

TABLE 7

Chi-square Test on Personalized Versus Nonpersonalized Correspondence When Combined with Casual Letter Type

Status	Personalized	Nonpersonalized	Totals
Returned	69 (44.2%)	62 (40.0%)	131
Not Returned	87 (55.8%)	93 (60.0%)	180
Totals	156(100.0%)	155(100.0%)	311

χ^2=0.571, with 1 df, p=0.4499; 1-β at α=.05 for SES=.42 and for MES >.99.

nonpersonalized (58.3%) correspondence where the veiled threat letter type was employed (Table 8). That is, the probability of obtaining a difference in response rate as great (3.2%) or greater than that observed was .5678. Again, $1-\beta$ was only .42 for detecting differences in response rate of the 5% order in the population and a difference in the order of 5% may have remained undetected. It is unlikely that a difference in the order of 10% exists as power for effects of that order was .94. Since response rates to the veiled threat letter were statistically different from the casual letter when combined with the nonpersonalized format and there was no statistical difference when personalized and nonpersonalized format were combined with veiled threat, the implication is that a veiled threat letter works equally well at stimulating the responses whether the format is personalized or nonpersonalized. The latter finding provides further evidence of the noneffect of personalization.

Effects of Follow-up by Demographic Characteristics of Respondents

Five demographic items were selected to provide an indication as to whether prompting itself, as well as the different prompting techniques--singularly or in concert--stimulated nonrespondents differently. A Goodness of Fit test was calculated between responses to the techniques which demonstrated themselves to be most effective and the other combinations of prompting and then between the various categories of prompting techniques and the unprompted responses.

In all of the following Goodness of Fit tests, $1-\beta$ for detecting differences between prompted and unprompted groups of small effect size was very low. All were below a power of .30 with some as low

TABLE 8

Chi-square Test on Personalized Versus Nonpersonalized Correspondence When Combined with Veiled Threat Letter Type

Status	Personalized	Nonpersonalized	Totals
Returned	86 (55.1%)	91 (58.3%)	177
Not Returned	70 (44.9%)	65 (41.7%)	135
Totals	156(100.0%)	156(100.0%)	312

χ^2=0.326, with 1 df, p=0.5678; 1-β at α=.05 for SES=.42 and for MES >.99.

as .07. Power for detecting differences of medium effect size increased considerably with those tests involving the individual prompting techniques and all prompting grouped together ($1-\beta = .61$ to $> .99$). Power for the Goodness of Fit tests involving the combinations of techniques was approximately .50 in all cases.

For those tests where power was inadequate, in particular, less than $1-\beta = .80$, it is possible that the random sample, being of insufficient size to demonstrate population effects of a small size, leads one to conclude that the fit is good or that no differences exist in the demographic characteristics of the two groups compared. The same holds true for differences in the order of a medium or large effect size where $1-\beta$ is less than .80. As power increases, it is more likely that an hypothesized effect size of the population would have been demonstrated if it existed. Thus, the significance of each test must be considered in the light of the power associated with it.

Goodness of Fit in relation to the ages of respondents for casual with veiled threat, nonpersonalized-veiled threat with personalized-veiled threat and personalized-casual and nonpersonalized-casual, and the various categories of prompted responses with all unprompted responses demonstrated no statistically significant differences (Tables 9 and 10). This finding implies that prompting of nonrespondents with any of the techniques under study or their combinations induces a response from the same age groups of subjects as did the initial questionnaire.

TABLE 9

Goodness of Fit of Responses to Casual with Veiled Threat Letter and Personalized-Veiled Threat, Personalized-Casual, and Nonpersonalized-Casual with Nonpersonalized-Veiled Threat Follow-up Correspondence - Age Category

Follow-up Technique	χ^2 Value*	p	1-β **		
			SES	MES	LES
Casual with Veiled Threat	1.25	>.05	.14	.84	>.99
Personalized-Veiled Threat with Nonpersonalized-Veiled Threat	4.29	>.05	.11	.64	.99
Personalized-Casual with Nonpersonalized-Veiled Threat	3.10	>.05	.09	.53	.98
Nonpersonalized-Casual with Nonpersonalized-Veiled Threat	2.83	>.05	.09	.48	.93

*Critical Value $_{95}\chi^2$=7.815 with 3 df.

**SES is a 3.4% difference.
MES is a 10.1% difference.
LES is a 16.8% difference.

TABLE 10

Goodness of Fit of the Various Categories of Prompted Responses with the Unprompted Responses-Age Category

Follow-up Technique	χ^2 Value*	p	1-β ** SES	MES	LES
Prompting	2.72	>.05	.28	>.99	>.99
Personalization	2.89	>.05	.16	.89	>.99
Nonpersonalization	0.29	>.05	.16	.89	>.99
Veiled Threat	0.31	>.05	.18	.93	>.99
Casual	2.52	>.05	.14	.84	>.99
Personalized-Veiled Threat	1.29	>.05	.11	.64	.69
Personalized-Casual	4.73	>.05	.09	.53	.98
Nonpersonalized-Veiled Threat	0.88	>.05	.11	.66	.99
Personalized-Casual	0.88	>.05	.09	.48	.93

*Critical Value $_{95}\chi^2$=7.815 with 3 df.

**SES (small effect size) is 3.4% difference.
MES (medium effect size) is 10.1% difference.
LES (large effect size) is 16.8% difference.

As mentioned above, consideration of 1-β in each test is mandatory in interpretation of the results. That is, the probability of identifying differences of a small effect size in the population was low.

Comparison of responses in relation to marital status for casual with veiled threat, nonpersonalized-veiled threat with personalized-veiled threat and personalized-casual and nonpersonalized-casual indicated no statistical differences. However, 1-β for detecting small and medium effect sizes in the population was low (Table 11). The Goodness of Fit of the categories of prompted responses with unprompted responses in relation to marital status demonstrated a statistically significant difference (χ^2=13.40 with 4df, p=0.01) for those respondents receiving nonpersonalized correspondence. There were no significant differences in marital status for all other categories of follow-up (Table 12). This implies that the nonpersonalized format elicited responses from subjects whose marital status differs from those who responded to the initial questionnaire. It was not possible in this case to identify the effect created by the nonpersonalized format as small numbers tend to make the results misleading.

Although a significant difference in highest educational status was not evident when casual was compared to veiled threat letter type, there were significant differences in reported educational status when the nonpersonalized-veiled threat follow-up responses were compared to personalized-veiled threat and personalized-casual follow-up (Table 13). This implies that the type of prompting technique does effect the subjects relative to their stated education status. For these differences to have been detected, it is likely that they would have been of the order of a medium or large effect size in the population--7.0% and 11.6% respectively.

TABLE 11

Goodness of Fit of Responses to Casual with Veiled Threat Letter and Personalized-Veiled Threat, Personalized-Casual, and Nonpersonalized-Casual with Nonpersonalized-Veiled Threat Follow-up Correspondence - Marital Status

Follow-up Techniques	χ^2 Value*	p	1-β ** SES	MES	LES
Casual with Veiled Threat	8.09	>.05	.12	.79	>.99
Personalized-Veiled Threat with Nonpersonalized-Veiled Threat	7.78	>.05	.10	.59	.97
Personalized-Casual with Nonpersonalized-Veiled Threat	8.65	>.05	.09	.49	.77
Nonpersonalized-Casual with Nonpersonalized-Veiled Threat	4.00	>.05	.08	.43	.89

*Critical Value $_{95}\chi^2$=9.488 with 4 df.

**SES is a 2.8% difference.
MES is a 8.5% difference.
LES is a 14.1% difference.

TABLE 12

Goodness of Fit of the Various Categories of Prompted Responses with the Unprompted Responses- Marital Status

Follow-up Technique	χ^2 Value*	p	1-β **		
			SES	MES	LES
Prompting	4.68	>.05	.26	>.99	
Personalization	8.48	>.05	.14	.86	>.99
Nonpersonalization	13.40	<.05	.14	.85	>.99
Veiled Threat	3.30	>.05	.16	.91	>.99
Casual	8.05	>.05	.12	.79	>.99
Personalized-Veiled Threat	6.40	>.05	.10	.59	.97
Personalized-Casual	8.68	>.05	.09	.49	.77
Nonpersonalized-Veiled Threat	2.22	>.05	.10	.61	.98
Nonpersonalized-Casual	3.99	>.05	.08	.43	.89

*Critical Value $_{95}\chi^2$=9.488 with 4 df.

**SES is a 2.8% difference.
MES is a 8.5% difference.
LES is a 14.1% difference.

TABLE 13

Goodness of Fit of Responses to Casual with Veiled Threat Letter and Personalized-Veiled Threat, Personalized-Casual, and Nonpersonalized-Casual with Nonpersonalized-Veiled Threat Follow-up Correspondence - Highest Educational Status

Follow-up Techniques	χ^2 Value*	p	1-β ** SES	MES	LES
Casual with Veiled Threat	1.51	>.05	.11	.50	>.99
Personalized-Veiled Threat with Nonpersonalized-Veiled Threat	47.36	<.05	.08	.50	.95
Personalized-Casual with Nonpersonalized-Veiled Threat	11.67	<.05	.08	.41	.89
Nonpersonalized-Casual with Nonpersonalized-Veiled Threat	5.43	>.05	.07	.37	.85

*Critical Value $_{95}\chi^2$=11.070 with 5 df.

**SES is a 2.3% difference.
MES is a 7.0% difference.
LES is a 11.6% difference.

There was a statistically significant difference in highest educational status of respondents for all prompted respondents when compared to unprompted respondents (χ^2=21.90 with 5 df, p<0.0001), for respondents receiving nonpersonalized follow-up (χ^2=29.74 with 5 df, p<0.001), for the respondents receiving veiled threat follow-up correspondence (χ^2=12.46 with 5 df, p<.05), and for casual (χ^2=11.47 with 5 df, p<.05) and nonpersonalized-veiled threat correspondence (χ^2=20.71 with 5 df, p<.01). This is illustrated in Table 14.

There were no differences in employment status of respondents between veiled threat and casual letters nor between the nonpersonalized-veiled threat correspondence when compared to personalized-veiled threat, personalized-casual, and nonpersonalized-casual correspondence (Table 15). However, the probability of identifying differences of a small effect size in the population was low. At best, therefore, one can only state that differences, if they do exist in the population, are not of the large effect size. As illustrated in Table 16, there were no significant differences in the current employment status of the respondents in any of the categories of follow-up techniques when prompted responses were compared to unprompted responses to this item. This implies that prompting of nonrespondents with any of the techniques under study or their combinations induces a response from subjects stating the same employment status as did the initial questionnaire.

Analysis of responses to the item related to job positions of the respondents who were currently employed resulted in no significant differences in responses between follow-up techniques; however, $1-\beta$ for detecting small effect size over all techniques and their combinations

TABLE 14

Goodness of Fit of the Various Categories of Prompted Responses with the Unprompted Responses- Highest Educational Status

Follow-up Technique	χ^2 Value*	p	1-β ** SES	MES	LES
Prompting	21.90	<.05	.23	>.99	
Personalization	3.39	>.05	.12	.80	>.99
Nonpersonalization	29.74	<.05	.12	.80	>.99
Veiled Threat	12.46	<.05	.13	.85	>.99
Casual	11.47	<.05	.11	.76	>.99
Personalized-Veiled Threat	2.80	>.05	.08	.50	.95
Personalized-Casual	3.21	>.05	.08	.41	.89
Nonpersonalized-Veiled Threat	20.71	<.05	.09	.54	.96
Nonpersonalized-Casual	9.81	>.05	.07	.37	.85

*Critical Value $_{95}\chi^2$=11.070 with 5 df.

**SES is a 2.3% difference.
MES is a 7.0% difference.
LES is a 11.6% difference.

TABLE 15

Goodness of Fit of Responses to Casual with Veiled Threat Letter and Personalized-Veiled Threat, Personalized-Casual, and Nonpersonalized-Casual with Nonpersonalized-Veiled Threat Follow-up Correspondence - Current Employment

Follow-up Technique	χ^2 Value*	p	1-β ** SES	MES	LES
Casual with Veiled Threat	2.12	>.05	.21	.93	>.99
Personalized-Veiled Threat with Nonpersonalized-Veiled Threat	3.77	>.05	.16	.79	>.99
Personalized-Casual with Nonpersonalized-Veiled Threat	0.09	>.05	.13	.70	.99
Nonpersonalized-Casual with Nonpersonalized-Veiled Threat	0.00	>.05	.12	.65	.97

*Critical Value $_{95}\chi^2$=3.841 with 1 df.

**SES is a 5% difference.
MES is a 15% difference.
LES is a 25% difference.

TABLE 16

Goodness of Fit of the Various Categories of Prompted Responses with the Unprompted Responses- Current Employment

Follow-up Technique	χ^2 Value*	p	1-β ** SES	MES	LES
Prompting	0.52	>.05	.44	>.99	
Personalization	0.72	>.05	.23	.96	>.99
Nonpersonalization	0.18	>.05	.23	.96	>.99
Veiled Threat	0.98	>.05	.26	.98	>.99
Casual	0.47	>.05	.21	.93	>.99
Personalized-Veiled Threat	2.91	>.05	.16	.79	>.99
Personalized-Casual	0.40	>.05	.13	.70	.99
Nonpersonalized-Veiled Threat	0.08	>.05	.16	.81	>.99
Nonpersonalized-Casual	0.11	>.05	.12	.65	.97

*Critical Value $_{95}\chi^2$=3.841 with 1 df.

**SES is a 5% difference.
MES is a 15% difference.
LES is a 25% difference.

and for medium effect size for combinations of techniques was low (Table 17). There were, however, statistically significant differences in the responses over all prompting (χ^2=13.66 with 4 df, p<.02), with the veiled threat letter (χ^2=11.91 with 4 df, p<.02), and with the personalized-veiled threat combination (χ^2=9.82 with 4 df, p<.05). There were no statistically significant differences in all other techniques nor their combinations (Table 18). Prompting and use of the veiled threat letter appeared to be more effective in stimulating responses from staff nurses than from other categories of position.

Visual Inspection of Directional Effects on Selected Demographic Items

The numbers of respondents, once they were divided into the categories of response for each item, were so low that results of statistical analyses aimed at detection of the size of effects of the various unprompted responses would have been questionable. Visual perusal of the proportions of prompted responses in comparison to unprompted responses, however, provided gross indication of the effect the follow-up technique had on respondents.

When comparing stated marital status of the prompted respondents to that of the unprompted respondents, it was observed that personalization and veiled threat demonstrated an increased proportion of single respondents and a decreased proportion of married. When the aforementioned techniques were used in combination, the result was even greater proportional difference.

The reported highest educational status also appeared to be affected by the technique used in prompting. Over all prompted respon-

TABLE 17

Goodness of Fit of Responses to Casual with Veiled Threat Letter and Personalized-Veiled Threat, Personalized-Casual, and Nonpersonalized-Casual with Nonpersonalized-Veiled Threat Follow-up Correspondence - Current Position

Follow-up Technique	χ^2 Value*	p	1-β **		
			SES	MES	LES
Casual with Veiled Threat	2.71	>.05	.11	.65	.99
Personalized-Veiled Threat with Nonpersonalized-Veiled Threat	4.37	>.05	.09	.47	.93
Personalized-Casual with Nonpersonalized-Veiled Threat	0.52	>.05	.08	.37	.83
Nonpersonalized-Casual with Nonpersonalized-Veiled Threat	1.50	>.05	.08	.33	.78

*Critical Value $_{95}\chi^2$=9.488 with 4 df.

**SES is a 2.8% difference.
MES is a 8.5% difference.
LES is a 14.1% difference.

TABLE 18

Goodness of Fit of the Various Categories of Prompted Responses with Unprompted Responses - Current Position

Follow-up Technique	χ^2 Value*	p	1-β ** SES	MES	LES
Prompting	13.66	<.05	.21	.99	>.99
Personalization	8.31	>.05	.12	.75	>.99
Nonpersonalization	5.62	>.05	.12	.73	>.99
Veiled Threat	11.91	<.05	.13	.81	>.99
Casual	5.54	>.05	.11	.65	.99
Personalized-Veiled Threat	9.82	<.05	.09	.47	.93
Personalized-Casual	5.14	>.05	.08	.37	.83
Nonpersonalized-Veiled Threat	4.87	>.05	.09	.48	.94
Nonpersonalized-Casual	2.05	>.05	.08	.33	.78

*Critical Value $_{95}\chi^2$=9.488 with 4 df.

**SES is a 2.8% difference.
MES is a 8.5% difference.
LES is a 14.1% difference.

dents, there was an increased proportion of respondents prepared at the diploma (R.N.) level but a decreased proportion of respondents prepared beyond this level. All techniques and their combinations demonstrated this characteristic except the personalized-veiled threat combination which exhibited similar proportional characteristics to the unprompted respondents. The nonpersonalized-veiled threat combination demonstrated the greatest difference with the proportion of diploma-level respondents increasing 23.6% over the unprompted proportion. This implies that a nonpersonalized-veiled threat combination would be more effective in eliciting responses from diploma nurses but not from nurses prepared at higher levels.

The proportions of stated current position of the respondents also appeared to be affected by the type of follow-up techniques used. Prompting, over all techniques, increased the proportion of responses from staff nurses but tended to decrease responses from categories such as head nurses, supervisors and instructors. The nonpersonalized and casual techniques separately and in combination increased the proportion of staff nurse respondents, however, the personalized-casual combination demonstrated the greatest difference for this category of nurse. This would imply that the personalized-casual combination would be most effective in stimulating responses from staff nurses.

Effects of Follow-up on Responses Relative to Continuing Education

Two items were selected to provide an indication as to whether there were statistical differences in the stated continuing education needs within the prompted respondent groups and when comparing prompted

responses with those of the respondents to the initial questionnaire. (See Appendix I, Items A3 and A9.) There was a statistically significant difference in responses to item A3 for all follow-up techniques and their combinations in both of the above-mentioned analyses. Comparisons of responses within techniques as well as comparisons between the prompted and unprompted responses indicated statistically significant differences in stated continuing education needs. This implies that prompting itself and the various techniques or combinations thereof elicit different responses to inquiries regarding continuing education needs in comparison to unprompted responses. Although it was not necessarialy known whether prompted respondents would state the same continuing education needs as did the unprompted respondents, one can be 95% confident that, due to the random selection and assignment of the four sample groups, the needs among these four should be the same. Since significant differences within prompted responses and in prompted versus unprompted responses were identified, evidence is provided that the techniques under study--individually and/or in concert--either influence the responses provided by the prompted respondents or elicit responses from a particular category of respondent whose continuing education needs were related to this characteristic (Tables 19 and 20).

A statistically significant difference was observed in the numbers of respondents expressing intention to apply for admission to a baccalaureate program in nursing when personalized-veiled threat was compared to nonpersonalized-veiled threat correspondence (Table 21). Statistically significant differences were also observed in three categories of follow-up when prompted versus unprompted responses were compared:

TABLE 19

Goodness of Fit of Responses to Casual with Veiled Threat Letter and Personalized-Veiled Threat, Personalized-Casual, and Nonpersonalized-Casual with Nonpersonalized-Veiled Threat Follow-up Correspondence - Continuing Education Needs

Follow-up Techniques	χ^2 Value*	p	1-β** SES	MES	LES
Casual with Veiled Threat	16.17	<.05	.09	.61	.98
Personalized-Veiled Threat with Nonpersonalized-Veiled Threat	60.82	<.05	.07	.35	.82
Personalized-Casual with Nonpersonalized-Veiled Threat	39.51	<.05	.07	.34	.81
Nonpersonalized-Casual with Nonpersonalized-Veiled Threat	54.33	<.05	.07	.29	.74

*Critical Value $_{95}\chi^2$=12.592 with 6 df.

**SES is a 2.3% difference.
MES is a 7.0% difference.
LES is a 11.6% difference.

TABLE 20

Goodness of Fit of the Various Categories of Prompted Responses with Unprompted Responses - Continuing Education Needs

Follow-up Technique	χ^2 Value*	p	1-β **		
			SES	MES	LES
Prompting	45.54	$<.05$	.17	.95	$>.99$
Personalization	20.89	$<.05$	.10	.65	.99
Nonpersonalization	38.27	$<.05$	.09	.63	.98
Veiled Threat	19.41	$<.05$	.10	.68	.99
Casual	35.45	$<.05$	.09	.61	.98
Personalized-Veiled Threat	13.13	$<.05$	.07	.35	.82
Personalized-Casual	13.22	$<.05$	.07	.34	.81
Nonpersonalized-Veiled Threat	32.50	$<.05$	.07	.37	.85
Nonpersonalized-Casual	30.76	$<.05$	.07	.29	.74

*Critical Value $_{95}\chi^2=12.592$ with 6 df.

**SES is a 2.3% difference.
MES is a 7.0% difference.
LES is a 11.6% difference.

TABLE 21

Goodness of Fit of Responses to Casual with Veiled Threat Letter and Personalized-Veiled Threat, Personalized-Casual, and Nonpersonalized-Casual with Nonpersonalized-Veiled Threat Follow-up Correspondence-Applying for Admission to Baccalaureate Program

Follow-up Techniques	χ^2 Values*	p	$1-\beta$ ** SES	MES	LES
Casual with Veiled Threat	1.21	$>.05$	.13	.76	$>.99$
Personalized-Veiled Threat with Nonpersonalized-Veiled Threat	20.94	$<.05$	.09	.54	.95
Personalized-Casual with Nonpersonalized-Veiled Threat	5.29	$>.05$	.09	.46	.91
Nonpersonalized-Casual with Nonpersonalized-Veiled Threat	4.86	$>.05$	.08	.43	.88

*Critical Value $_{95}\chi^2=7.815$ with 3 df.

**SES is a 3.4% difference.
MES is a 10.1% difference.
LES is a 16.8% difference.

prompting itself (χ^2=11.78 with 3 df, p<.01), personalization of correspondence (χ^2=8.28 with 3 df, p<.05), and nonpersonalization (χ^2=8.78 with 3 df, p<.05). This is illustrated in Table 22. For all other Goodness of Fit tests related to this item there were no significant differences in responses. These results imply that at least three of the above-mentioned techniques lead to the capturing of different responses to inquiries regarding the individual's intention to apply for admission into a baccalaureate program in nursing and indicate that these types of prompting either influence the response provided by the respondent or are systematically related to a particular demographic characteristic of the respondent.

Since the follow-up subjects were randomly selected and randomly assigned into subgroups, it would be expected that (95% of the time) the patterns of answers provided by the respondents should be equivalent in the subgroups. However, significant differences were observed in the above analyses indicating that at least three of the prompting variations had a systematic effect on responses or selected respondents having different responses. The observed differences in continuing education needs may be a function of the demographic differences which were evident in the prompted respondents. This was not the case for four techniques in which no statistical differences were evident. (See Table 24--techniques designated **.) The results strongly suggest that the differences in continuing education needs were a function of the prompting. It was not possible to establish whether the demographic data actually did predict continuing education need for the remaining five techniques as numbers in each category were so low.

It would have been beneficial to conduct Goodness of Fit tests similar to those described above on other items related to continuing

TABLE 22

Goodness of Fit of the Various Categories of Prompted Responses with Unprompted Responses - Applying to Admission to Baccalaureate Program

Follow-up Technique	χ^2 Value*	p	1-β **		
			SES	MES	LES
Prompting	11.78	<.05	.29	>.99	>.99
Personalization	8.28	<.05	.14	.82	>.99
Nonpersonalization	8.78	<.05	.14	.84	>.99
Veiled Threat	5.05	>.05	.15	.88	>.99
Casual	7.05	>.05	.13	.76	>.99
Personalized-Veiled Threat	2.89	>.05	.09	.54	.95
Personalized-Casual	5.58	>.05	.09	.46	.91
Nonpersonalized-Veiled Threat	6.23	>.05	.10	.60	.98
Nonpersonalized-Casual	2.66	.05	.08	.43	.88

*Critical Value $_{95}\chi^2$=7.815 with 3 df.

**SES is a 3.4% difference.
MES is a 10.1% difference.
LES is a 16.8% difference.

education needs but the number of respondents to these items was selective and thus low. Statistical results would have been questionable due to very low power.

Summarizing Remarks

The Chi-square tests of response rates demonstrated statistically different response frequencies for the four types of follow-up correspondence. The veiled threat letter was found to be statistically more effective in obtaining responses than was the casual letter. In combination with the nonpersonalized format, the veiled threat letter was statistically more effective than was the casual.

Statistically significant differences were observed in the nonpersonalized format in comparison to the unprompted responses for marital status (the former had an increased proportion of single respondents). All prompted responses, veiled threat and nonpersonalized responses, and nonpersonalized-veiled threat in combination also demonstrated statistically significant difference in educational status (the former had an increased proportion of diploma nurses). All prompted responses, veiled threat, and the personalized-veiled threat combination demonstrated statistical differences in current position of prompted versus unprompted responses. Most disturbingly, however, all prompting techniques demonstrated significant differences in continuing education needs within prompting techniques and between prompted and unprompted responses. Significant differences in whether the respondents were interested in applying for admission to a baccalaureate program were evident in all prompted responses, personalized and non-personalized format. This information is summarized in Tables 23 and 24.

TABLE 23

Comparison of Follow-up Techniques with those Techniques Resulting in Statistical Differences in Response Rates - Areas in Which Statistically Significant Differences Were Observed

Follow-up Technique	Selected Items						
	Age	Marital Status	Educational Status	Current Employment	Current Position	Continuing Education Needs	Applying for B.Sc.
Casual with Veiled Threat						*	
Personalized-Veiled Threat with Nonpersonalized-Veiled Threat			*			*	*
Personalized-Casual with Nonpersonalized-Veiled Threat			*			*	
Nonpersonalized-Casual with Nonpersonalized-Veiled Threat						*	

*Signifies areas in which significant differences were observed.

TABLE 24

Comparison of Responses for Prompting Techniques with Unprompted Responses for Selected Items - Areas in Which Significant Differences Were Observed

Follow-up Technique	Selected Items						
	Age	Marital Status	Educational Status	Current Employment	Current Position	Continuing Education Needs	Applying for B.Sc.
All Prompting			*		*	*	*
Personalization**						*	*
Nonpersonalization		*	*			*	*
Veiled Threat			*		*	*	
Casual**						*	
Personalized-Veiled Threat					*	*	
Personalized-Casual**						*	
Nonpersonalized-Veiled Threat			*			*	
Nonpersonalized-Casual**						*	

*Signifies areas in which significant differences were observed.

**For these follow-up techniques, selected demographic variables could not explain the demonstrated differences observed in continuing education needs.

Even though follow-up may elicit responses from persons with different characteristics, it is most important that the technique elicit the true feelings of the subject and not force an invalid response. Comparison of continuing education needs of respondents within prompted groups and of unprompted respondents with prompted respondent groups indicated that all techniques and their combinations demonstrated statistical differences in the responses provided. The responses for the various techniques were also statistically different when compared to each other. If type of prompting did not "create" an opinion, and since the sample was randomly selected and then randomly divided, the characteristics and opinions of each group of subjects should have been (95% confident) equivalent, even if they were systematically different from the unprompted respondents. To observe statistically significant differences between the responses in the subgroups, especially with low power, suggests that the prompting technique(s) had some large systematic effect on the respondents in that group either by stimulating returns from a particular group of people or by causing persons to provide an answer that did not represent their true opinions (the latter probably being the sole cause for techniques designated by ** in Table 24). Thus, if responses are forced and do not represent the true opinions of the nurses, the validity of the prompted survey group is highly questionable.

To merely increase response rate is not a valid objective if the responses obtained are not representative of the true opinions of the respondents. It is possible that demographic characteristics do relate to continuing education needs and thus a difference would be expected if there is no demographic equivalence between the prompted and unprompted groups. If, however, there is no relationship between

demographic characteristics and continuing education needs, the differences in responses would be due to the prompting technique having caused respondents to alter their answers. By increasing response rate, one would only be obtaining invalid results.

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Project

The purpose of this project was to determine the effectiveness of two types of prompting techniques, personalization and use of a veiled threat, in stimulating responses from a random sample of non-respondents to a population survey of Registered Nurses in relation to continuing education needs.

A selective review of the literature relating to questionnaire validity revealed that, although many techniques have been designed and suggested to increase return rates to mail questionnaires, a large number have not been experimentally verified. The general concensus of experts in the field appears to be that a combination of techniques should be utilized to achieve the most favorable results. A distinct need was identified for evolving prompting techniques that would be most effective especially with a particular group of subjects.

This project was carried out in combination with a population survey of Registered Nurses in the Province of Alberta and involved sending combinations of two prompting techniques to four randomly selected and assigned groups of nonrespondents. Statistical analyses were then performed on the return rates to determine whether statistically significant differences existed relative to the techniques utilized. For each of the various categories of prompting, responses to selected demographic items and items indicating interest in the subject of continuing education were compared within prompted groups and between

prompted and unprompted groups to determine whether the prompting techniques had a differential effect on the type of subject responding or the answers the respondents provided.

Results of the statistical analyses indicated that there was a statistical difference between the response rates for those receiving the veiled threat letter in comparison to those receiving casual letters. The difference in response rates relative to the personalized and non-personalized correspondence was not statistically significant. In relation to the four combinations of prompting techniques, the nonpersonalized-veiled threat letter elicited a statistically significant difference in responses relative to the other three combinations. Further analysis indicated that the veiled threat letter worked equally well whether it was combined with personalized or nonpersonalized correspondence.

Comparisons on demographic items indicated that the Goodness of Fit between the various categories of responses given to selected items by prompted respondents and between prompted and unprompted respondents was not consistent; several statistically significant differences were identified.

Most importantly, however, all techniques demonstrated significant differences in response patterns to the focal topic in the questionnaire (continuing education needs of the respondents). Either the tested prompting techniques affected the validity of responses in the prompted groups or continuing education needs were related to various demographic characteristics of the respondents.

Conclusions

From the results of this project which was designed to assess the effectiveness of two prompting techniques in eliciting responses from a random sample of nonrespondents to a survey of continuing education needs of Registered Nurses, the following conclusions are drawn:

1. The veiled threat letter was more effective in increasing response rate (a point estimate of 14.6% better) than was the casual letter.
2. Personalization of correspondence did not elicit a statistically different rate of return in comparison to nonpersonalized correspondence. (If it did affect rate, the effect was less than a rate of 10% and probably less than 5%.)
3. Prompting techniques tended to be effective with particular types of nonrespondents when compared with each other and with unprompted responses:
    (a) Nonpersonalized-veiled threat correspondence stimulated more responses from diploma nurses but less from nurses educated beyond that level.
    (b) Personalized-veiled threat correspondence stimulated more responses from single versus married respondents.
    (c) Personalized-casual correspondence stimulated more responses from staff nurses.
4. At least three, if not all four, prompting techniques elicited a statistically different pattern of responses when compared to unprompted responses and to each other. Although one has

no assurance that the prompted and unprompted groups would have equivalent continuing education needs, the opinions of the subgroups should have been (95% confident) equivalent. Statistically significant differences in the subgroups, especially with low power, indicate that the prompting techniques had some large systematic effects on responses provided by the respondents in that group. Although continuing education needs may be a function of demographic differences for some techniques, the encompassing differences in continuing education needs suggest that the prompting technique(s), by "forcing" an answer, also caused prompted respondents to demonstrate statistically different patterns of responses in comparison to unprompted respondents, thus bringing the validity of prompted responses into question.

Recommendations

Replication of this study should include resolution of the limitations associated with it. There is a need for a better method to identify the type of follow-up letter that was sent to each respondent. Increased numbers in the sample would provide greater power for the statistical analyses as would stratification of the sample. It would then be possible to utilize more items for validity tests. This would make possible the identification of the relationship of the different follow-up techniques with the various demographic characteristics of the respondents.

The effects of personalization of follow-up correspondence and veiled threat versus casual follow-up letters were tested in this project. Their effects, if utilized with the initial mailout, may not

be the same. It would thus be worthwhile to determine the effects of these prompting techniques when used with the initial mailout of questionnaires.

This investigation involved follow-up on a particular questionnaire to a specific population of nurses. The influence of the studied follow-up techniques may thus be limited to these nurses, to this questionnaire, to the method of mailing, or any combination of the three. It would be useful to determine the effects of the techniques under different survey circumstances. Replication of this study with the use of a control group on which no prompting techniques would be utilized in combination with preselected samples in which nonrespondents would receive the various follow-up techniques would help to clarify the specific effects of each technique on various categories of respondents. Again, numbers in each group should be large enough to provide high power.

From this study, it appears that follow-up techniques affect validity of responses. However, only two techniques of prompting were tested. It is important to determine whether other techniques of prompting exhibit the same results.

Following the initial A.A.R.N. survey of all A.A.R.N. Members relative to their continuing education needs, concern was expressed by the Ad Hoc Committee relative to the low response rate (23.3% after prompting). The results of this study, however, indicate that prompted responses may be invalid. Thus, the unprompted group may provide the only trustworthy indication of need in terms of subjects executing the stated intentions (assuming that the unprompted group was more likely to do what they said they would do). The questionnaire in the A.A.R.N. Newsletter may well have been the most innocuous method for inducing

the kind of response consistent with the nurses' actual perceptions of their educational needs and goals.

It has been statistically determined that the tested prompting techniques, individually and/or in combination, did affect the validity of responses for this group of prompted subjects. It is possible that other methods of prompting produce the same effects when forcing subjects to respond. Possibly the only trustworthy answers in mail questionnaires are from the unprompted respondents. For this reason, the true need may be the determination of a method of data collection that does not "hassle" subjects but encourages conscientious cooperation.

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APPENDIX I

A.A.R.N. Survey of All Registered Nurses*

*This is a 60% visual reduction of the original questionnaire which was commercially printed and included as a tear-out portion in the A.A.R.N. Newsletter.

SURVEY OF ALL A.A.R.N. MEMBERS

Your Association is undertaking this study to determine the needs for Continuing Education of A.A.R.N. members (active and associate) in the Province. Employers' comments are also being sought in relation to employment opportunities and factors enabling nurses to pursue further education. The Association views this information as being of great value in determining the direction which Continuing Education for nurses should take in the next few years. The information you provide will enable your concerns to be conveyed to the universities, colleges and relevant government departments.

The support and participation of all A.A.R.N. members is important. Confidentiality of your reply will be maintained. Please direct any questions regarding this study to Heather Andrews, (Project Director), at 467-2155 or c/o A.A.R.N. at 426-0160.

Please answer the following questions by checking the appropriate box or completing as requested.

PART A—TO BE ANSWERED BY ALL A.A.R.N. MEMBERS (ACTIVE & ASSOCIATE)

1. a. Please indicate your marital status.
   - Single ☐
   - Married ☐
   - Widowed ☐
   - Divorced ☐
   - Separated ☐

   b. Are there individuals who are financially dependent on you?
   - Yes ☐
   - No ☐

2. Current professional education status—*highest* level attained.
   - Diploma (R.N.) ☐
   - Clinical course(s) (specify) _____ ☐
   - Baccalaureate in Nursing ☐
   - Master's Degree in _____ ☐
   - Doctorate in _____ ☐
   - Other (please specify) _____ ☐
   - Currently a student (specify) _____ ☐

3. Please specify what you perceive to be your continuing education needs, both in course content and duration.

   _____
   _____
   _____
   _____

4. Which of the following educational centres could you attend? (Indicate order of preference if more than one.)
   - Edmonton ☐
   - Calgary ☐
   - Lethbridge ☐
   - Grande Prairie ☐
   - Medicine Hat ☐
   - Red Deer ☐
   - Vermilion ☐
   - Lloydminster ☐
   - Fort McMurray ☐
   - None of the above ☐

5. In relation to your first preference in question 4, on which of the following bases would you be able to undertake study?

TIME PERIOD	Full Days	Part Days
Up to 1 week	☐	☐
Up to 6 weeks	☐	☐
Up to 3 months	☐	☐
Up to 6 months	☐	☐
Up to 1 year	☐	☐
More than 1 year	☐	☐
None ☐		

6. Would you undertake an educational program if no academic credit or certificate were given for it?
   - Yes ☐
   - No ☐
   - Comments _____
     _____
     _____

7. Are you currently employed as a Registered Nurse?

   Yes ☐
   No ☐

   If "no" proceed to item 8.

   If "yes" please answer the following questions.

   a. What is your current position?

   _____

   b. Do you consider yourself employed on a full-time or part-time basis?

   Full-time ☐
   Part-time ☐

   c. Type of setting

   General Acute Care Hospital ☐
   Auxiliary Hospital ☐
   Nursing Home ☐
   Psychiatric Hospital ☐
   School of Nursing
   — college ☐
   — hospital ☐
   — university ☐
   Health Unit or Department ☐
   Occupational Health ☐
   Doctor's Office ☐
   Other (please specify) ☐

   _____

   _____

   d. If applicable, please indicate the bed capacity of the institution in which you work.

   1 - 50 ☐
   51 - 100 ☐
   101 - 500 ☐
   501 - 1000 ☐
   More than 1000 ☐

   e. Location of institution/agency.

   City/Town _____

8. Which of the following programs/courses would best meet your Continuing Education needs in nursing? Rank on a scale of 1 (most preferred) to 5 (least preferred).

   Inservice programs ☐
   Short-term continuing education courses ☐
   Clinical certificate courses ☐
   Refresher courses for registration ☐
   University level courses ☐

9. If you do not have a Baccalaureate in Nursing or are not presently working towards one, what is the likelihood that you will apply for admission to such a program within the next two years?

   Very likely ☐
   Likely ☐
   No likelihood ☐
   Unsure ☐

10. Initial nursing education programs currently offered in Alberta, both diploma and baccalaureate, provide the student with a general overview of a variety of clinical areas.

    In an attempt to meet employer demand for specialized personnel, several educational and service agencies offer clinical courses.

    Which of the following do you perceive as being the most desirable method to permit you to specialize in a particular clinical field?

    Please indicate an order of preference by making three choices:

    first choice —1
    second choice—2
    third choice —3

    Opportunity to specialize through elective clinical courses in diploma (R.N.) program ☐
    Work experience and inservice education ☐
    Post-R.N. clinical courses ☐
    Opportunity to specialize in Baccalaureate program ☐
    Post-Baccalaureate clinical courses ☐
    Clinical specialization at the Master's level ☐
    I do not wish to specialize ☐

11. Do you feel that a post-R.N. clinical certificate course should provide credit towards a Baccalaureate Degree (e.g. Occupational Health Nursing)?

    Yes ☐
    No ☐

Those interested in undertaking university-level education, proceed to Part B.
Those interested in undertaking a clinical course, proceed to Part C.
Those interested in neither university-level education nor clinical courses, please proceed to Part D.

PART B—TO BE ANSWERED ONLY BY THOSE INTERESTED IN UNDERTAKING OR PRESENTLY INVOLVED IN UNIVERSITY LEVEL EDUCATION

1. Please indicate your reason(s) for wanting to undertake university level education.

   _____
   _____
   _____
   _____

2. Which of the following university centres would you be able to attend on a full or part-time basis?

	Full-time	Part-time
Edmonton	☐	☐
Calgary	☐	☐
Lethbridge	☐	☐

3. Although there is a one year residency requirement in the Post-R.N. Baccalaureate programs, it is possible to obtain the balance of the program on a part-time basis.
   Which of the following alternative(s) to full-time study would be acceptable to your situation?

   Part-time day classes ☐
   Evening courses ☐
   Correspondence courses ☐
   Spring session at a university (two consecutive three week periods starting in May) ☐
   Summer sessions at a university (two consecutive three week periods starting in July) ☐

4. In some areas other than university centres, it is possible to offer some university courses provided a minimum of fifteen persons register for the course.
   Would you attend such a course?

   Yes ☐
   No ☐

5. Which (if any) of the following would be deterrent factor(s) in your being able to obtain a nursing degree?

   Lack of funding ☐
   Family responsibilities ☐
   Lack of convenient educational facilities ☐
   Loss of present position ☐
   Continuing education not a priority ☐
   Lack of time ☐
   Insufficient background ☐
   Lack of available courses applying to my area of interest ☐
   Too long a period since previous studies ☐
   Other (please specify) ☐

   _____
   _____

Please separate and complete page 4A where applicable.

Those interested in undertaking a clinical course, proceed to Part C.
Those not interested in undertaking a clinical course, proceed to Part D.

PART C—TO BE ANSWERED ONLY BY THOSE INTERESTED IN TAKING A CLINICAL COURSE

1. Presently there are a number of clinical courses offered at various institutions and agencies in Alberta.
   Which of the following are you likely to take in the next two years?
   - Occupational Health Nursing (8 months at Grant MacEwan) ☐
   - Cardiovascular Intensive Care Nursing (6 months at the U of Alberta Hospital) ☐
   - Extended Care Nursing (8 months at Grant MacEwan) ☐
   - Neurological and Neuro-surgical Nursing (20 weeks at Foothills Hospital) ☐
   - Operating Room Management (6 months at the U of Alberta Hospital) ☐
   - Advanced Practical Obstetrics (8 months at the U of Alberta) ☐
   - None ☐

2. Would you take a clinical course as listed in item 1 if it were offered at a different location?
   - Yes ☐
   - No ☐
   - If "yes" please specify _____

3. Would you take a clinical course in a specialty area other than those listed in item 1 if it were available?
   - Yes ☐
   - No ☐
   - If "yes" please specify _____

4. Please indicate your reason(s) for wanting to take a clinical course.

Please proceed to Part D.

PART D—TO BE ANSWERED BY ALL A.A.R.N. MEMBERS

Additional comments regarding this questionnaire:

Please indicate your A.A.R.N. Registration No. _____.

You are assured that confidentiality of your reply will be maintained.

Thank you for your assistance in this study.

Please mail this questionnaire in the postage-paid, self-addressed envelope provided to:

A.A.R.N., 10256 - 112 Street, Edmonton, Alberta T5K 9Z9

APPENDIX II

Personalized-Casual Follow-up Letter

ALBERTA ASSOCIATION OF REGISTERED NURSES

10256 - 112th STREET
EDMONTON, ALBERTA
T5K 1M6
TELEPHONE 426-0160

OUR FILE NO. -- 120.5

December 9, 1977

Through a Province-wide survey, the A.A.R.N. is providing an opportunity for nurses to contribute to the determination of the direction which Continuing Education for nurses should take in the next few years.

In the event that you have not yet completed the questionnaire that appeared in the November 1977 A.A.R.N. Newsletter, or if it has been misplaced, we are enclosing another for you to use. Please disregard this letter if you have returned the questionnaire. We appreciate your participation.

Yours sincerely,

Heather Andrews
Project Director

HA/db
Enclosure

APPENDIX III

Personalized-Veiled Threat Follow-up Letter

ALBERTA ASSOCIATION OF REGISTERED NURSES

10256 - 112th STREET
EDMONTON, ALBERTA
T5K 1M6
TELEPHONE 426-0160

OUR FILE NO. -- 120.5

December 9, 1977

From the A.A.R.N. Registration Numbers on questionnaires returned thus far, we note that you have not yet responded to the questionnaire on Continuing Education for nurses which appeared in the November 1977 A.A.R.N. Newsletter.

As stated in the preamble to the questionnaire, the A.A.R.N. views the information which you provide as being of great value in helping to determine the direction in which Continuing Education for nurses should proceed.

This is your opportunity to support and participate in a study being conducted by your Association. Your input will enable us to incorporate your views into decision making. Please take time to fill out and return the questionnaire.

In case you have misplaced the first questionnaire, we are enclosing another one for your use. Please disregard this letter if you have returned the questionnaire. We appreciate your participation.

Yours sincerely,

Heather Andrews
Project Director

HA/db
Enclosure

APPENDIX IV

Nonpersonalized-Casual Follow-up Letter

ALBERTA ASSOCIATION OF REGISTERED NURSES

10256 - 112th STREET
EDMONTON, ALBERTA
T5K 1M6
TELEPHONE 426-0160

OUR FILE NO. -- 120.5

December 9, 1977

Dear A.A.R.N. Member:

Through a Province-wide survey, the A.A.R.N. is providing an opportunity for nurses to contribute to the determination of the direction which Continuing Education for nurses should take in the next few years.

In the event that you have not yet completed the questionnaire that appeared in the November 1977 A.A.R.N. Newsletter, or if it has been misplaced, we are enclosing another for you to use. Please disregard this letter if you have returned the questionnaire. We appreciate your participation.

Yours sincerely,

Heather Andrews

Heather Andrews
Project Director

HA/db
Enclosure

APPENDIX V

Nonpersonalized-Veiled Threat Follow-up Letter

ALBERTA ASSOCIATION OF REGISTERED NURSES

10256 - 112th STREET
EDMONTON, ALBERTA
T5K 1M6
TELEPHONE 426-0160

OUR FILE NO. -- 120.5

December 9, 1977

Dear A.A.R.N. Member:

From the A.A.R.N. Registration Numbers on questionnaires returned thus far, we note that you have not yet responded to the questionnaire on Continuing Education for nurses which appeared in the November 1977 A.A.R.N. Newsletter.

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Yours sincerely,

Heather Andrews

Heather Andrews
Project Director

HA/db
Enclosure

VITA

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University of Alberta Hospital School of Nursing
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1965-1968 R.N.

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University of Alberta
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1976-1978 M.H.S.A. (Candidate)

HONOURS AND AWARDS:

Province of Alberta Graduate Scholarship
University of Alberta
1976-1977

The Alberta Association of Registered Nurses
Chapter #7, Edmonton, Alberta
Book Prize
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RELATED WORK EXPERIENCE:

General Duty Nurse, Charge Nurse, Nursing Instructor
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